

**REMARKS/ARGUMENTS**

The present Amendment is in response to the Office Action having a mailing date of January 18, 2006. Claims 1-42 are pending in the present Application. Applicant has amended claims 1, 13-14, 27-28 and 41-42. Applicant has also added claims 43-45. Consequently, claims 1-45 remain pending in the present Application.

Applicant has amended the specification to incorporate the U.S. Patent Application Serial Numbers for the cross-referenced co-pending patent applications. Applicant has also amended claims 1, 13, 27, and 41 to correct minor errors. These amendments are seen by Applicant as broadening or cosmetic, and as such, is not subject to the prosecution history estoppel imposed by Festo. For the record, Applicant points out that the Supreme Court in Festo noted that a cosmetic amendment would not narrow the patent's scope and thus would not raise the estoppel bar. Applicant has also amended claim 1 to more clearly recite that the structure is stored on a computer-readable medium. Applicant has also amended claims 15 and 29 to recite storage on a computer-readable medium. Support for this amendment can be found in the specification, page 4, lines 13-19. Claims 1, 15, and 29 have also been amended to recite that the superclass represents the query statement and includes an operation on a combination of the combined operator, the query element, and the combined query element. Support for this amendment can be found in the specification, page 24, lines 19-22. Applicant has also amended claims 14, 28, and 42 to remove the term "substantially". Applicant has also added new claims 43-45 which recite that at least one of the first subclass and the second subclass generically represent at least one query element in a plurality of query language dialects. Support for new claims 43-45 can be found in the specification, page 4, lines 15-17 and page 22, lines 16-18. Accordingly, Applicant respectfully submits that no new matter is added.

In the above-identified Office Action, the Examiner rejected claims 2, 13-14, 27-28, 30, and 41-42 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant respectfully traverses the Examiner's rejection. Claims 2 and 30 recite that at least one class comprises "zero or more types for the query element represented by that class and a subclass define for each identified type." Applicant respectfully disagrees with the Examiner's conclusion that the specification does not provide a standard for ascertaining what the type defined. Applicant further submits that it is clear that the term "type" refers to the query element. As indicated above, claims 2 and 30 both recite "types for the query element". Thus, the term type refers to the query element. The specification how to represent query elements from approximately page 23, line 12-page 28, line 13. In particular, various types of query elements are described including atomic query elements (page 23, lines 14-16), and combined query elements (page 23, lines 16-23). Moreover, a specific example of a query element used in a where statement (pate 24, line 11-page 27, line 7) is discussed. Moreover, specific examples of representations of query statements including various types of query elements are depicted in FIGS. 7-11. Accordingly, Applicant respectfully submits that the recitations of "types for the query element . . ." in claims 2 and 30 is clear and definite.

Applicant also respectfully traverses the Examiner's rejection of claims 13-14, 27-28, and 41-42. Applicant has amended claims 13, 27, and 41 to recite "at least one populated model" in lieu of "the" populated model. Applicant has also amended claims 14, 28, and 42 to remove the term "substantially." Applicant respectfully submits that one of ordinary skill in the art would understand the term "functionally equivalent" in claims 14, 28, and 42 need not mean exactly equivalent without the use of the term "substantially". Thus, as amended, claims 13-14, 27-28,

and 41-42 are also clear and definite. Accordingly, Applicant respectfully submits that claims 2, 13-14, 27-28, 30, and 41-42 under the standards of 35 U.S.C. § 112, second paragraph.

In the above-identified Office Action, the Examiner rejected claims 1-3, 5-10, 14-17, 19-24, 28-31, 33-38, and 42 under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,775,662 (Witkowski). In so doing, the Examiner relied upon item FIG. 5, item 511 of Witkowski as teaching the superclass, FIG. 5, item 521 as teaching a first subclass representing the atomic query element, FIG. 5, item 513 as teaching the combined query element, FIG. 5, item 524 as teaching a left subelement, and, apparently, FIG. 5, item 514 as teaching the right subelement. Further, with respect to claims 14, 28, and 42, the Examiner indicated that the query dialect corresponded to the syntax of a particular query expression described in Witkowski (See footnotes 8, 9, 19, and 20 of the above-identified Office Action).

Applicant respectfully traverses the Examiner's rejection. Claim 1 recites a structure for representing a query statement having an atomic query element and a combined query element related by a combined operator. Claim 1 recites a superclass that includes a first subclass, a second subclass and a relationship indicator between the first and second subclasses. Claim 1 further recites that the superclass represents the query statement and includes an operation on a combination of the combined operator, the query element, and the combined query element. Claim 1 further recites that the relationship indicator represents a relationship between the first subclass and the second subclass as defined by the combined operator. In addition, the first subclass represents the atomic query element while the second subclass represents the combined query element. In addition, claim 1 recites that each of the left and right subelements can be any subclass of the superclass. Independent claims 15 and 29 recite analogous methods and articles of manufacture.

Using the structure, method, and article of manufacture recited in claims 1, 15, and 29, a query statement may be represented in a manner that accounts for the syntax of the query language and is more detailed. Specification, page 22, lines 14-18. Moreover, multiple dialects can be accounted for. Specification, page 22, lines 16-17.

For example, the recited superclass, first subclass, second subclass, and relationship indicator can be understood using specific examples in the specification. Embodiments of such superclasses, subclasses, and relationship indicators are depicted in FIGS. 6A and 6B (among others) in the present application. For example, FIG. 6A is a representation of the query WHERE AQE CO CQE, in which AQE is the atomic query element DEPARTMENT.DEPTNO IN ('D01', 'D11', 'D21'), CO is the combined operator AND, and CQE is the statement (EMPLOYEE.SALARY > 5000 OR EMPLOYEE.JOB = 'MANAGER'). Specification, page 24, lines 18-26. Thus, the superclass indicating the query represented is node 51 and represents the entire statement WHERE AQE CO CQE. Thus, the superclass encompasses more than simply an operator between clauses in the statement. Instead, the superclass represents the query statement including the clauses and operators therein. The subclasses are individual nodes 52 and 53 that represent atomic and combined query elements.

Similarly, FIG. 6B is a representation of the query WHERE AQE<sub>1</sub> CO<sub>1</sub> (AQE<sub>2</sub> CO<sub>2</sub> AQE<sub>3</sub>). Specification, page 25, lines 15-17. Thus, as can be seen in FIG. 6B, the CombinedQueryElement(1) is the entire WHERE statement being represented and thus corresponds to the recited superclass. The CO<sub>1</sub> is the first operator within the superclass that combines the first subclass AQE<sub>1</sub> and the remaining portion of the statement. The AQE<sub>1</sub> is the first subclass. The node CombinedQueryElement(2) is the portion of the WHERE statement in

parenthesis and is the second subclass. This combined query element (which is also a subclass of the CombinedQueryElement(1)) includes two atomic query elements combined using the combined operator. Thus, the combined operator CO<sub>2</sub> is depicted as combinedOperator (OR), the atomic query element AQE<sub>2</sub> is depicted as node AtomicQueryElement(2), and the atomic query element AQE<sub>3</sub> is depicted as node AtomicQueryElement(3). Thus, the subclass CombinedQueryElement(2) has subclasses in the example depicted in FIG. 6B.

In contrast, Witkowski fails to teach or suggest the combination of the superclass, subclasses, and relationship indicator. Witkowski describes a method for more efficiently rewriting a query statement. Witkowski, Abstract. In order to do so, Witkowski discloses generating a predicate tree for filter criteria used to filter a particular query. Witkowski, col. 10, lines 57-67. An example of such a predicate tree is depicted in the cited FIG. 5 of Witkowski. Witkowski further states that the leaf nodes of the tree are predicates, while the parent nodes correspond to “conjunctive and disjunctive operators of conjunctive and disjunctive expressions” in the filtering criteria. Witkowski, col. 10, lines 63-66. Col. 10, line 33-35 of Witkowski depict the WHERE statement from which the tree in FIG. 5 of Witkowski is obtained. Based upon the WHERE statement in col. 10, lines 33-35, the node 511 is the AND operator for the criteria  $a > 3$  in item 521 and the remaining portion of the statement in col. 10, line 34 of Witkowski. Likewise, the nodes 512 and 513 are operators. For example, the node 512 is the OR operator for the criteria  $b > 1$  and  $b = 0$  in leaf nodes 522 and 523, respectively. Consequently, what is shown in the cited figure of Witkowski is a classic query tree in which each node represents a predicate (such as the leaves 522 and 523) or an operator (such as the nodes 511, 512, and 513).

In contrast to the structure, method, and article of manufacture recited in claims 1, 15, and 29, Witkowski fails to teach or suggest the combination of the recited superclass and subclasses

connected by a relationship indicator. As described above, Witkowski indicates that the parent nodes correspond to operators, rather than to the recited superclass. Stated differently, in the tree depicted in the cited drawing of Witkowski, there is no superclass under which the subclasses would be organized. Instead, the tree shown in FIG. 5 of Witkowski has a root node 511 that merely corresponds to an operator. Consequently, the root node 511 of Witkowski is more analogous to the recited subclasses or relationship indicator than the recited superclass. Further, Applicant can find no indication in Witkowski that a node in the tree of FIG. 5 of Witkowski can or should correspond to another query element. More specifically, Applicant can find no indication in Witkowski that the recited superclass can or should be provided as a root node of the tree depicted in FIG. 5 of Witkowski. Consequently, Witkowski fails to teach or suggest the structure, method, or article of manufacture recited in claims 1, 15, and 29, respectively. Accordingly, Applicant respectfully submits that claims 1, 15, and 29 are allowable over the cited references.

Claims 2-3, 5-10, and 14 depend upon independent claims 1. Claims 16-17, 19-24, and 28 depend upon independent claim 15. Claims 30-31, 33-38, and 42 depend upon independent claim 29. Consequently, the arguments herein apply with full force to claims 2-3, 5-10, 14, 16-17, 19-24, 28, 30-31, 33-38, and 42. Accordingly, Applicant respectfully submits that claims 2-3, 5-10, 14, 16-17, 19-24, 28, 30-31, 33-38, and 42 are allowable over the cited references.

Furthermore, Applicant respectfully submits that claims 14, 28, and 42 are separately allowable over the cited references. Claims 14, 28, and 42 all recite identifying a first query element type in a first query language dialect, identifying at least a second query element type that is in a second query language dialect and functionally equivalent to the first query language dialect. Claims 14, 28, and 42 also recite creating a generic subclass representative of both the

identified first and at least second element type. Thus, claims 14, 28, and 42 all recite the creation of a generic subclass for functionally equivalent query elements in multiple query language dialects.

In the above-identified Office Action, the Examiner cited to the particular syntax of query expressions in Witkowski as corresponding to different dialects. In particular, the Examiner cited the syntax of the expression  $c = 0 \text{ AND } d < 0$  and the syntax of the expression  $gc = 0 \text{ AND } d > 0$  as corresponding to different dialects. See, for example, footnotes 8 and 9 of the above-identified Office Action.

Applicant respectfully traverses the Examiner's rejection. As described in the specification, a number of dialects for a given query language, such as SQL, may be used. Specification, page 22, line 16. Examples of such dialects for SQL may include but are not limited to Oracle 9i (see, for example the discussion at the site <http://www-db.stanford.edu/~ullman/fcdb/oracle/or-nonstandard.html>), SQL Server, and MySQL (see, for example, [http://www.mssqlcity.com/Articles/Compare/sql\\_server\\_vs\\_mysql.htm](http://www.mssqlcity.com/Articles/Compare/sql_server_vs_mysql.htm)). Thus, one of ordinary skill in the art will readily recognize that query language dialects, such as SQL dialects, are not merely slightly different syntax in two different expressions. Stated differently, the portions of Witkowski cited and relied upon by the Examiner are merely different expressions, rather than different dialects. Consequently, Witkowski does not teach or suggest identifying functionally equivalent query elements in at least two different dialects and representing them both using a generic subclass. Claims 14, 28, and 42 are, therefore, separately allowable over the cited references.

The Examiner also rejected claims 4, 11-13, 18, 25-27, 32, and 39-41 under 35 U.S.C. § 103 as being unpatentable over Witkowski in view of Li. In so doing, the Examiner relied upon Li as teaching subclasses that represent tables.

Claims 4 and 11-13 depend upon independent claim 1. Claims 18 and 25-27 depend upon independent claim 15. Claims 32 and 39-41 depend upon independent claim 29. Consequently, the arguments herein with respect to Witkowski and the independent claims apply with full force to claims 4, 11-13, 18, 25-27, 32, and 39-41. In particular, Witkowski fails to teach or suggest the recited combination of the superclass, subclasses, and relationship identifier.

Li describes a mechanism for translation between a text format and visual format relational database queries. Li, Abstract. In order to perform this translation, Li describes providing a common data structure, multiple related lists, for text based and graphic based languages. Li, col. 5, lines 14-25. The cited portion of Li, however, describes eight basic data structures that are represented in the cited figure of Li as blocks. Li, col. 5, lines 37-46 and Fig. 3. Furthermore, Li describes specific data structures as lists. See, for example, Li, col. 6, lines 1-16. Applicant also agrees that at least some of the specific data structure describe tables. Moreover, Li also describes interfaces and providing a selection of choices from a menu. Although Li functions well for its intended purpose, the cited portion of Li does not describe a superclass, subclasses related to the superclass, or the recited relationship identifier.

Both Li and Witkowski fail to teach or suggest the recited combination of the superclass, subclasses and relationship identifier. Consequently, any combination of Li and Witkowski would also fail to teach or suggest this feature. Stated differently, if the teachings of Li were added to those of Witkowski, the combination might utilize the data structure of Li in representing a query, as well as the tree of Witkowski in filtering the query. The combination



might also use the interface(s) and query expressions in Li. However, the combination would still not utilize the combination of the superclass, subclasses, and relationship identifier. Thus, Witkowski in view of Li fails to teach or suggest the present invention as recited in varying scope in claims 4, 11-13, 18, 25-27, 32, and 39-41. Accordingly, Applicant respectfully submits that claims 4, 11-13, 18, 25-27, 32, and 39-41 are allowable over the cited references.

New claims 43-45 depend upon independent claims 1, 15, and 29, respectively. In addition, new claims 43-45 recite that at least one of the first subclass and the second subclass generically represent at least one query element in a plurality of query language dialects.

Applicant's attorney believes that this application is in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicant's attorney at the telephone number indicated below.

Respectfully submitted,

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